ANALYZING DETERMINANTS OF DELIVERY DELAY OF WATER PROJECTS IN ZANZIBAR: THE CASE OF SELECTED PROJECTS UNDERTAKEN BY ZANZIBAR WATER AUTHORITY (ZAWA)

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the Open University of Tanzania a dissertation entitled: **"*Analyzing determinants of delivery delay of Water Projects in Zanzibar; The case of selected projects undertaken by Zanzibar Water Authority (ZAWA)*"** in partial fulfillment of requirements for the Degree of Master of Project Management (MPM) of the Open University of Tanzania.

……..

Dr Salvio E. Macha

(Supervisor)

……..……..

Date

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DECLARATION

I, **Muhsini Hassan**, do hereby declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University for the similar purpose or any other degree award.

…….

Signature

……

Date

DEDICATION

This work is dedicated to the simple life and loving memory of my Grandmother, Mariam A. Magandi who lived it better, she is my inspiration and I thank God for having had her in my life.

ACKNOWLEDGEMENT

This dissertation is a result of cooperative efforts of many individuals. First and foremost, I am so grateful to God for his cordial love and blessings that he bestowed me all the time. I am so grateful to my supervisor Dr. Salvio E. Macha for his scholarly guidance from the start of this research to the end. I do acknowledge the lectures given by all lecturers of Open University of Tanzania during the course of my MPM programme.

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My sincere appreciations goes to my MPM classmates most especially at Zanzibar Regional Centre including Mr. Abduswamad (group leader), Mr. Seif, Mr Nassir Mwinyi, Mr Omar Amani and Mr Ibrahim Rashid widely known as Mr. Kim due to their collaboration and contribution to this study.

ABSTRACT

This study analyzed determinants of project delivery delay that arose when implementing water projects where Zanzibar Water Authority was involved through her projects. The objectives are; to examine the extent to which project planning and scheduling, contract management and financial flow influences on delivery delay of water projects in Zanzibar. The study is of Positivism paradigm and deductive approach, and it adopted a descriptive survey research design. Data collection technique used is a set of administered questionnaire which were randomly distributed to a sample of 100 personnel of different cadre ranging from engineers, project managers, client and personnel of similar sort. The study used descriptive statistical techniques where results of Pearson Collerations and Multiple Regression analysis from SPSS were used to analyse collected data from questionnaires. The study revealed that financial flow, planning and scheduling have positive and significant influence on delivery delay of water projects in Zanzibar whereas for contract management the study did not find the relationship between contract management and delivery delays of water projects. Furthermore, the study recommended several measures for reducing impact of delivery delay including prior making of financial arrangements for clients, establishing of free regulatory body for construction projects and improving project performance through trainings and formulation of guidelines and policies. The researcher suggest further studies to be done such that different tools may be applied and addition of independent variables since delivery delay is not bound to only contract management, financial flow and project planning and scheduling.

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LIST OF ABBREVIATIONS

AFDB	African Development Bank
AG	Age group of participant
CAG	Controller and Auditor General
CO	Contract management
CPM	Critical Path Method
DUWASA	Dodoma Urban Water Supply And Sewerage Authority
FI	Financial flow to water projects
G	Gender of participant
JR	Job title of respondent
LE	Participant level of education
MPM	Master of Project Management
MS	Marital status of participant
P	Project planning and scheduling
PDD	Project Delivery Delay
PMBOK	Project Management Body of Knowledge
PMI	Project Management Institute
RGoZ	Revolutionary Government of Zanzibar
SPSS	Statistical Package for Social Science
UNDB	United Nations Development Business
UNDP	United Nations Development Program
YOE	Years of experience on construction
ZAWA	Zanzibar Water Authority
ZUWSP	Zanzibar Urban Water Sanitation Project

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Ideally projects are supposed to run continuously without delays where projects managers and other stakeholders are responsible to ensure the timely execution of project activities so as to meet the objectives. Kimemia (2015) called for outlined strict mechanism discouraging parties to the project from laxity that may lead to delays.

Iyer and Jha (2006) narrated that construction projects is dynamic in nature, project do swing across “behind schedule”, “on schedule” and “ahead schedule”. Project professionals have to strategize with selected factors at any particular schedule performance level exhibited by the project and concentrate on the selected factors instead of handling all the factors simultaneously as handling all factors do not yield the results proportionate with the efforts.

The government of India has initiated several construction projects to convert from intermittent to a continuous water supply. These continuous water supply projects were implemented either under Public Private Partnership (PPP) or direct funding by the government. However, many projects witnessed failure during the later stage of project life cycle (Tawalare and Balu, 2016).

Kaliba *et al.,* (2009) found that the major causes of delays in road construction projects in Zambia were delayed payments, financial deficiencies on the part of the

client or the contractor, contract modifications, economic problems, material procurement problems, changes in design drawings, staffing problems, unavailability of equipment, poor supervision, construction mistakes, poor coordination on site, changes in specifications, labour disputes and strikes.

Most important causes of delay and cost overruns in construction projects in Uganda's Public sectors are five and found to be changes in the work scope, delayed payments to contractors, poor monitoring and control, high inflation and interest rates (Alinaitwe *et al.,* 2013).

Raghupathi (2003) argues that laying of transmission pipes, construction of purification plant, securing forestland and land acquisitions made two water supply public projects in the city of Solapur and New Bombay in India to stalling.

Kariungi (2014) argues that project planning tools, procurement procedures, climatic factors and timely availability of funds causes the delay for electric power supply in Kenya. Amandin and Kule (2016) found that implemented public construction projects during the period of 2009 to 2012 were delayed at 58% of their cumulative expected period, whereas only 5.2% of those projects suffered from cost overruns of 15.9% of total project value.

Mohamed (2017) argued that Politics and political goodwill has a significant influence on the rates of projects completion in Kenya. The politicians decide the amount of money to be allocated to various public projects, the time periods that this money should take to reach the project implementers, the site/location of the projects, the priority projects and many more. Furthermore they influence the people to lead these

projects, the contractors to be awarded contracts, the people to be employed and many more. Also, budgetary allocations from both the national and county governments have a significant influence on the implementation and completion of projects. Besides the amount of money allocated, other factors like the time period taken for this money to be released, the source of the money and the relationship between the funding bodies and the projects implementers are significant.

Moreover, County governance structures have a significant influence on the rates of projects completion. For example, information flow, decisions making, employee's management have a significant role to play in relation to projects implementation and completion in the county. Finally, the researcher concludes that contracts management significantly influences the rates at which projects are completed by counties. The laws, rules and regulations that govern the contract awarding process, the people to award the contracts, the stakeholders to be enjoined in the contractual process and the time periods of paying the contractors is very important in determining the time projects are completed.

In spite of the efforts made by Kenyan government, Non-Governmental Organizations and other developmental stakeholders, the water shortages in Kinango has been a challenge for the majority of residents not only in the rural areas but also in major urban centers, The government tried to alleviate this problem by digging pans and drilling boreholes where they failed due to salinity of the underground water and poor management of the pans. However in 2003, a new water-supply project was initiated by the community and given the name, The Samburu-Vigurungani Water Supply Project (Mdoe, 2011).

Mfinanga and Kaswamila (2014) argued that constraints varies from one place to another where lack of support such as financial and technical assistance, unreliable pumping systems, absence of water management committees and lack of transparency on revenues generated from water projects were factors that shaken DUWASA.

In different phases, ZAWA collaborated with donors to initiate several water projects in Zanzibar to serve the Island with clean water, such projects are Enhancement of Water Supply Management of ZAWA Phase I (2007-2010), The Project for Enhancement of Water Supply Management of ZAWA Phase II (2011-2016) and Zanzibar Water Sanitation Project (2008-2015). These bunch of construction projects struggled to several factors that might hinder the planned completion time to be met.

1.2 Statement of the Problem

Access to clean water is a basic human right. Despite the fact RGoZ has clear intent on providing safe and clean water supply to her populaces through implementing several development projects, still projects are being attacked by different factors that lead to overrun the delivery time. Projects such as ZUWSP and others are believed to be a victim of those factors whereas for ZUWSP, it was initiated in 2013 and it was supposed to be completed by December 2017 but this time present the project is ongoing status.

Different studies have been done on public construction projects delay and scholars presented different views on main causes of project delay in public constructions, still the problem turn out to be chronic. Kwatsima (2016) found contract administration, finances and technology play significant role on delays in large constructions in

Kenya, Alinaitwe *et al.,* (2013) point the finger at high interest and inflation rates, scope changes, delayed payments to contractor and poor monitoring and control in Uganda's construction projects. Kikwasi (2012) found factors such as design changes, delays in payment to contractors, information delays, funding problems, poor project management, compensation issues and disagreement on the valuation of work done were leading on accounting construction projects delay in Tanzania.

Government of Tanzania set aside Tsh. 65,125,061,863 for 132 city councils to be spend on different water supply and rehabilitation projects, unfortunately at end of the year TSh.34,619,316,179 which makes 53% of total budget was left due to those city councils failing to undertake the intended projects, according to CAG report of 2011. Therefore, this study identifies the most significant factors that causes delay in water construction projects and proposes strategies to minimize their impacts for the comparable upcoming projects in Zanzibar.

1.3 Research Objectives

1.3.1 General Objective

The main objective of this study is to analyze determinants of delivery delay of Water Projects in Zanzibar; the case of selected projects undertaken by Zanzibar Water Authority (ZAWA).

1.3.2 Specific Objectives

As for this study, Specific objectives are examining the extent to which:-

(i) Project planning and scheduling influence on delivery delay in water projects.

(ii) Contract management influence on delivery delay in water projects.

(iii) Financial flow influence on delivery delay in water projects.

1.4 Research Questions

This study is guided by the following questions:

(i) What extent to which project planning and scheduling influence on delivery delay in water projects?

(ii) What extent to which contract management influence on delivery delay in water projects?

(iii) What extent to which financial flow influence on delivery delay in water projects?

1.5 Significance of the Study

The research was done for the purpose of identifying significant factors that are important to refer when undertaking public projects most especially for Water Supply related projects so as to apply mitigation and accordingly respond to factors that causes project delay. The findings of this study can be used by all parties or stakeholders involved in public projects including client, project manager, project team, contractors and others. As for the case study, ZAWA is in favorable position to get the most of it since they can use it as reference for their upcoming projects.

This study is continuation of covering the research gap, where delay on construction projects have been studied outside of Zanzibar by many scholars and most of them were concentrating on roads, highways, housings, electricity. Other scholars may use this study as literature review for their fieldwork of similar sort where all possible findings are being shown by statistical figures.

1.6 Scope of the Study

This study analyzed determinants of delivery delay of Water Projects in Zanzibar; the case of selected projects undertaken by Zanzibar Water Authority (ZAWA). Thus, the study targeted project donors, project stakeholders, project managers, consultants, contractors, project teams and beneficiaries for a period of three months.

1.7 Limitations of the Study

Upon undertaking this study, several factors limited my work, for example busy schedule of my respondent most especially ZAWA and Ministry of Land, Water, Energy and Environment employees who played a significant role on contributing required data to this study and fear of being spied for several employees of ZAWA and donors since this study needed confidential data to identify real reasons for project delay in order to keep the industry an eye open and the research is not intended to point the finger at wrong doers, that's why we explained to our respondents that this study is for educational purpose, and they can use the findings for preventive measures for their comparable upcoming projects.

1.8 Organization of the Study

This research report was done in five chapters, chapter one is the introduction which includes the background to the Study, Statement of the Problem, Research Objectives, Research questions, Significance of the study, Scope of the study, limitations of the study and Organization of the study. Chapter two of the study consists of the literature review with information from other articles, which are relevant to the problem in study including topic such as Conceptual definition, Theoretical literature review,

Empirical literature review, Research gap and Conceptual framework. Chapter three entails the research methodology to be used in the research briefly includes research paradigm, research approach, research design, Procedure for data collection, Data processing and analysis, Validity and reliability of data. Chapter four has given the insights of data analysis; the findings of the study are being presented and discussed using correlations between variables and regression models. Then lastly in chapter five, the study has given a summary of findings; here brief discussion on the results from data analysis interpreting what the findings means. From there conclusion was made and possible measure to be taken to reduce the impact of delivery delay is given. Furthermore the study suggests further areas for research to add up to preventive measures for delivery delay.

CHAPTER TWO

LITERATURE REVIEW

2.1 Conceptual Definition

2.1.1 Project

Project Management Institute (2000; 2013) describe project as a temporary endeavor undertaken to create a unique product, service, or results. Lester (2006) defined a project as unique set of coordinated activities, with definite starting and finishing points, undertaken by an individual or organization to meet specific objectives within defined schedule, cost and performance parameters. A project is an investment activity encompassing a current or future outlay of funds in the expectation of futuristic benefits (Chandra, 2010). A project is said to be temporary because it has got the start and finish time where temporarily it does not necessary for project to take few period of time it may range several years. The end of the project can be either of the following situation; Project objectives are met, Project objectives will not be met or can't be met, client wishes to terminate the project or Project is no longer needed.

2.1.2 Project Management

PMI (2000; 2013) argues that project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Lester A (2006) defined project management as the planning, monitoring and control of all aspects of a project and the motivation of all those involved in it, in order to achieve the project objectives within agreed criteria of time, cost and performance.

Furthermore, PMI (2000; 2013) describes project management as the art of directing and coordinating human and material resources throughout the life of a project by

using modern management techniques to achieve predetermined objectives of scope, cost, time, quality and participation satisfaction. In addition to that, they categorize Project management into five Group processes, which are Initiation process, Planning process, Execution process, Monitoring and control process and closing process.

2.1.3 The Art of Project Management in Construction Projects

Santos (2017) argues concept of project management in construction projects requires knowledge of modern management as well as an understanding of the design and whole construction process. Often construction project contains many variables in which any change/delay of either may have significant impacts on a whole project in different angles. Here, if project designers have limited knowledge of the details of the construction methods, resources, and enterprise environmental factors e.t c they will solely rely on assumptions and if those assumptions turn out to be false they will suffer the consequence like failure to finish at all or on time.

2.1.3.1 Delays

Seboru (2015) describes delay as a time overrun of a project beyond the official agreed completion time as stated in contracts, Studies have been done on project delays as a results several categories where formed. Hamzah *et al.,* (2011) on study of delays on construction projects concluded that, they are of three type excusable, non-excusable and concurrent delays, and set aside a framework for all three kinds as shown in the Figure 2.1.

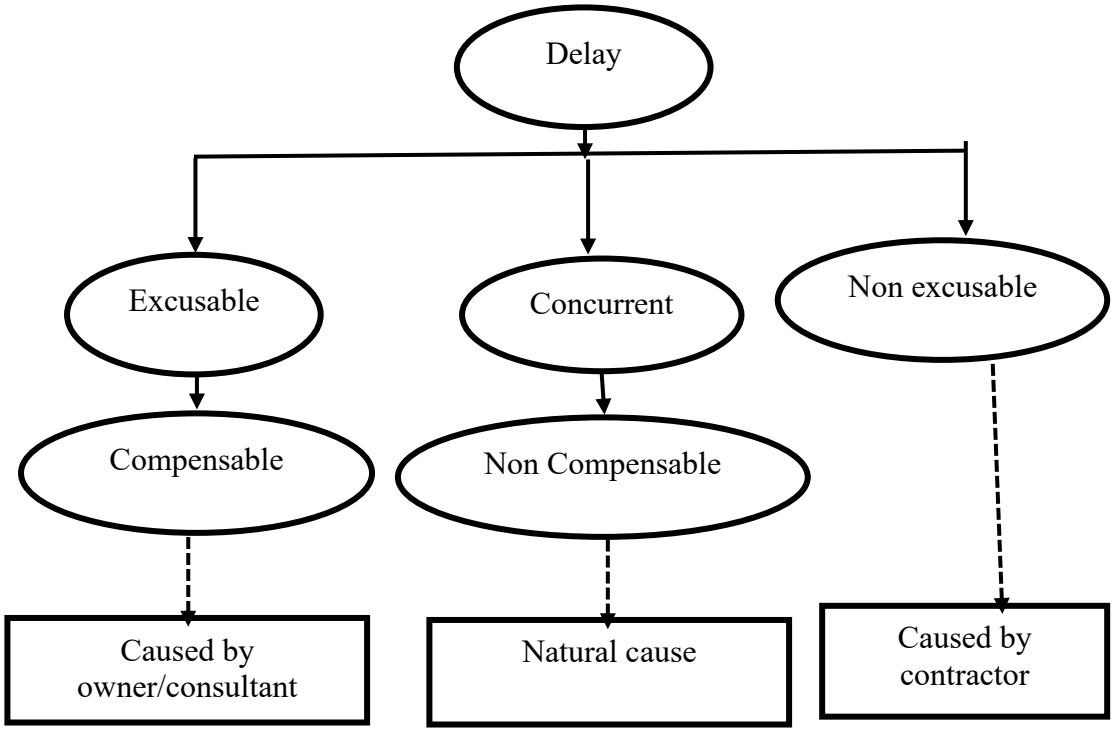

Figure 2.1: Construction Delay Theoretical Framework

Toor and Ogunlana (2008) carried out a related study on project delays in Thailand found that projects timely completion carried more weight than other success criteria. The study revealed that different projects differ in criteria for project delivery but timely completion and cost effectiveness are essential to the whole process.

2.1.3.2 Delays in Construction Projects

Koshe and Jha (2016) defined construction delays as the late completion of work compared to the planned schedule or contract schedule and argued further it only can be minimized when their cause are identified. Projects always encounter several factors within a project life cycle that may alter its completion time. These factors may be anticipated or not, hence account to a project delay. Nowadays project delays are common problems with immeasurable cost to contracting entities and society at large. Also the delays are reoccurring problems and have negative impact on project

success in terms of time, quality and cost (Knight et *al.,* 2009). This problem become chronic and worsening worldwide (Ahmed *et al.,* 2002).

2.2 Theoretical Literature Review

Sekaran and Bougie (2010) termed the theoretical review as a logically developed, described and elaborated network of associations among the variables believed relevant to the problem situation identified. It describe theories that attempt to explain the research problem under investigation focusing on specific variables being sought. Different theories were developed to guide the understanding of several research questions in doubt. This study was done in reference to the following theories namely Project Management theory, Agency theory and financial distress theory.

2.2.1 Project Management Theory

The Project Management Institute (2000; 2013) describe elements of control known as the Project Management Body of Knowledge Areas (PMBOK). They entail the guidelines for managing projects and define project management related concept, also describe the project management life cycle and its related processes. It is accepted as general theory and can be used in many projects of different fields. The theory covers crucial issues in project management and divides those issues into ten knowledge areas. Susilo *et al.,* (2007) elaborated further that these knowledge areas are derived from best practice in project study cases and can be considered as the most important elements in project management.

Morris (2001) argued that although each knowledge area consist of number of processes some differences in detail of the project management knowledge area across

various project types varies e.g. success criteria, requirement management, information management, and performance management. This study adopted the PMBOK to investigate and analyze potential factors that are likely to cause project delay.

Table 2.1: Project Management Knowledge Areas Versus Process Groups

Knowledge areas	Project management process groups				
	Initiating process group	**Planning process group**	**Executing process group**	**Monitoring and control process group**	**Closing process group**
Project integration	• Develop Project Charter	• Develop Project Management Plan	• Direct and Manage Project Work	Monitor and Control Project Work Perform Integrated Change Control	• Close Project or Phase
Project scope management		• Plan Scope • Management Collect Requirements • Define Scope • Create WBS		• Validate Scope • Control Scope	
Project time management		• Plan Schedule Management • Define Activities • Sequence Activities • Estimate Activity Resources • Estimate Activity Durations • Develop Schedule		• Control Schedule	
Project cost management		• Plan Cost Management • Estimate Costs • Determine Budget		• Control Costs	
Project quality management		• Plan Quality Management	• Perform Quality Assurance	• Control Quality	
Project human resource management		• Plan Human Resource Management	• Acquire Project Team • Develop Project Team • Manage Project Team		
Project communication management		• Plan Communications Management	• Manage Communications	• Control Communications	
Project risk management		• Plan Risk Management • Identify Risks • Perform Qualitative Risk Analysis • Perform Quantitative Risk Analysis • Plan Risk Responses		• Control Risks	
Project procurement management		• Plan Procurement Management	• Conduct Procurements	• Control Procurements	• Close Procurements
Project stakeholder management	• Identify Stakeholders	• Plan Stakeholder Management	• Manage Stakeholder Engagement	• Control Stakeholder Engagement	

Source PMI (2013)

2.2.2 Agency Theory

The owner of a project is the person or group that provides the financial resources for its delivery, accepts the project milestones, and project completion (PMI, 2000; 2013). Normally a project owner/principal hires a contractor/agent to execute all the activities required to accomplish a project. Turner and Müller (2004) argued, the responsibility of project success lies on the hands of project owners who holds the business case however, undertaking of all activities pertaining to a particular project are delegated to contractors.

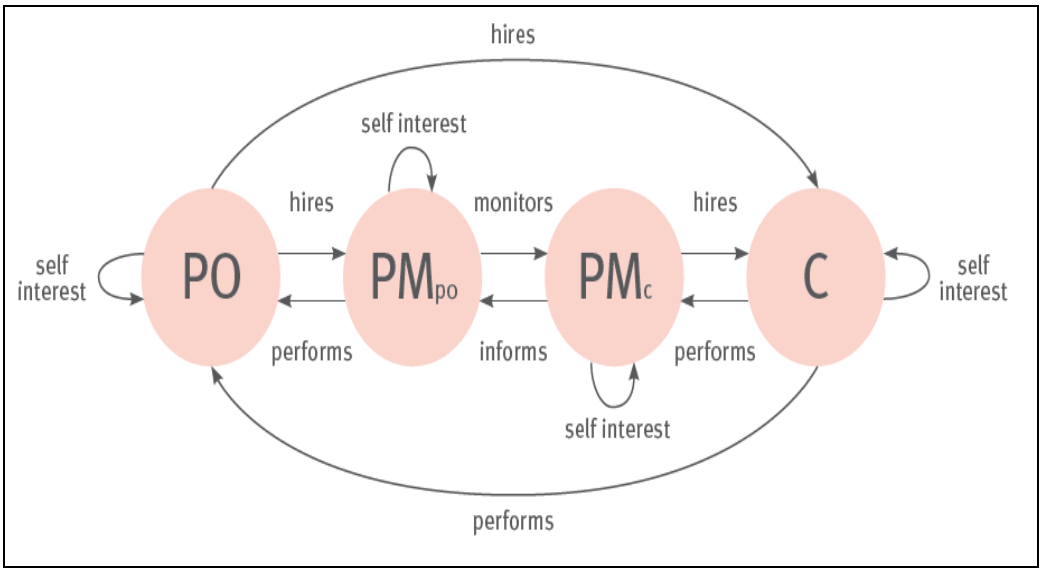

Figure 2.2: Principal-Agent Relationship Framework for Construction Projects

Source: Ceric (2012)

Key: (PO: Project owner, C: Contractor, PMpo: Project owner's project manager, PMc: Contractor's project manager)

Eisenhardt (1989), narrated that Agency theory developed in positivist and principal – agent relationship sharing a common unit of analysis that is contract.

2.2.2.1 Positivist Perspective

Eisenhardt (1989) argued, in positivist the focus is on identifying the situations that are likely for principal and agent to have conflicts and describe the mechanisms that limit the tendency of agents to have self-serving behavior.

2.2.2.2 Principal – Agent Relationship

Eisenhardt (1989), For this model between the two parts the focus is on determining the optimal contract (behavior versus outcome), the model assumes goal conflict between principal and agent, an easily measured outcome, and an agent who is more risk averse than the principal. This model can be described easily by the following cases; first, if the principal has a complete information on agent's doings then a contract that is based on behavior is more favorable. Second case, given the self-interest of agent and if the principal does not know what exactly the agent has done whether agent acted or not acted according to the agreed terms. If agent violate the agreed term then agency problems arise due to two parts having different goals and the principal is not sure/believe whether the agent has done as agreed and forming so called information asymmetry.

Ceric (2012) suggest that Information asymmetry can be hidden characteristics, hidden information and hidden intention in turn they generate three risks which are adverse selection (misrepresentation of ability/skills by the agent), moral hazard(lack of effort on the part of the agent) and hold-up respectively. Eisenhardt (1989) argued further information systems such as budgeting systems, reporting procedures, board of directors, additional layers of management can be invented to reveal agents' behavior to the management so as to have a complete information. Turner and Müller (2004)

argues also this theory addresses the way project owner and agent communicate in their principal – agent relationship and contract complications associated by information asymmetry.

2.2.3 Financial Distress Theory

Beaver *et al.,* (2011) defined financial distress as inability of a company to pay its financial obligations as they mature and argued further, in the stakeholder perspective it is important to asses likelihood of financial distress since it determine the payout distribution associated with their particular investment.

Brigham and Ehrhardt (2013) argued, intrinsic value of a company is the present value of its expected future free cash flows. There exist the value that may decline these future cash flows including general economic conditions, industry trends, and company-specific problems such as shifting consumer tastes, obsolescent technology, and changing demographics in existing retail locations.

The theory help to addresses the firm's financial capability to fund the projects, organizing and securing timely release of project funds to prevent unnecessary delays. Many organization suffers project delays associated with financial problems such as late funding and poor estimation of budget, therefore this theory comes to help on elaborating the financial feasibility.

2.3 Empirical Literature Review

Several studies across the world conducted investigating timely delivery of construction projects for instance Al-Momani (2000) conducted a survey on 130

public projects in Jordan and out of those only 106 were delayed representing 82% where Frimpong *et al.,* (2003) observed that 33 out of 47 projects were delayed representing 70% in Ghana. Aftab (2014) found out that projects in Zambia construction industry delayed up to 10% to 30% on average annually.

2.3.1 Project Planning and Scheduling

Kalinova (2007) defined project planning as all process involving collection of baseline data, needs assessment and developing action plan, implementation plan and evaluation plan purposely to ensure the timely completion of project and transfer of lessons learned to other projects and argued further the need of target groups must be well defined before the goals, activities and resource required being formulated.

Planning in project management is crucial for completion of project, Khang and Moe (2008) calls for excellent capacity thinking because details including implementation process, deliverables, milestones, task timelines fallback positions and re-planning will be documented and used as framework during project execution. Brown and Hyer (2010) identified processes of estimating project cost, identifying the purpose, scope definition, determining customer requirements, identifying tasks and estimating time and all activities that should be undertaken to accomplish the project are reviewed. Just because you have initial planning in place it doesn't mean all is done, projects tend to deviate, so there will be regular re-planning throughout. Alinaitwe (2011) suggest proper project planning to eliminate unexpected project problems during implementations. Chandra (2010) point out that poor project planning is a foremost factor that hinders successful implementation of public projects in India as a results

projects become uneconomical due to time and cost overrun. When studying delays and difficulties in implementation in reference to Water Supply Project in India, Aditya *et al.,* (2017) categorize construction engineering planning into concept planning and implementation planning. They further argued that engineers are not provided with sufficient time to make effective implementation planning and resources are put into execution before the planning is completed, works are being done under compulsions with only conceptual planning from the clients. McNeil and Hartley (1986) put emphasize on the role of project planning on timely delivery of construction projects where they call for the intimate employment of skilled people in this stage.

Chilipunde (2010) observed the improper planning by contractors when they fail to develop workable strategies at the initial stages affects the whole project most especially timely delivery as far as quality product is concerned. Aftab (2014) found out that ineffective planning and scheduling by contractors were second dominating factor after delay in progress payments led time overrun in construction projects in Zambia. Emam and Farrell (2014) found the construction industry had bad reputation for frequently exceeding the planned duration, the delays are attributed to ineffective planning and scheduling of projects when exploring the challenges and opportunities on project planning and scheduling in Qatar. They found most of planners use Critical Path Method (CPM), moreover on most projects in Qatar the use of CPM is mandated in contracts. CPM is scheduling technique that lies under three assumptions time optimization, network and deterministic scheduling. The traditional CPM failed to acknowledge uncertainties for example in real life there is no certainty on assumptions

e.g delivery date of materials, weather, laws and regulations etc., so failure to acknowledge these factors that affect the project lead to project delay.

Raghupathi (2003) found out two water supply public projects in the city of Solapur and New Bombay in India faced with seven and six years behind schedule respectively where implementation schedule were spotted as the main reason in processes like securing forestland and land acquisitions for New Bombay whereas for Solapur, laying of transmission pipes and construction of purification plant.

2.3.2 Contract Management

Toor and Ogunlana (2008) identified inefficient management of contractors as one of the major causes of project delay in construction projects in Thailand. Aditya *et al.,* (2017) argue most of the time contractors fail to meet the obligations of the contract but they defend their own interest and point the finger at clients.

Eriksson and Westerberg (2011) studied on effects of cooperative procurement procedures on construction project performance where there were problems relating to contractual laws and regulations, contractual relationship and legal issues have significant influence on implementation of construction projects in turn might cause project delay.

Frimpong *et al.,* (2003) argue poor contract management to account for project delays in developing country. These can be attributed to the way contracts are being awarded, in most cases contracts are awarded to lowest bidder. It is further argued lowest bidder may lack managerial skills and less attention to the contractor's plan.

Kimani and Kimwele (2015) suggest on unclear laws and regulations, legal issues and contractor relationship on contract management played a vital role of projects delay for Kenya National Housing Corporation.

Aibinu and Odeyinka (2002) revealed that factors relating to contractors, clients and consultants influence on delivery delays of project in Nigeria. The higher the presence of a factor, the more the delay is experienced. Kaliba et al., (2009) found out construction projects in Zambia were subjected to irregular contract modifications in turn led to project delay. Kikwasi (2012) point out problems such as incompetence of contractors, contractors having multiple projects and contractual claims has influence in time overrun of construction projects in Tanzania. Contractors are entrepreneur in nature, so they are in business of making money at expenses of good management, they pay low wages, submit very low bids and have little, if any, ability to plan and coordinate contracts.

2.3.3 Financial Flow

Naizai and Gidado (2012) observed that some of the finance related factors affecting project delays include cash flow problems in organizations, lack of funding and late release of project fund. Al-homidan *et al.,* (2013) observe payment delays, contractor financial status, owner financial status, fluctuation in exchange rates, banks loan policies, inflation and monopoly as the main factors contributing to financial distress in projects. A report by UNDP (2015) shows financial resources are determining factor on timely project delivery, know what the project context since it is money that can be used to hire project planning and management staff, provide trainings, acquire various equipment and other resources like technology etc.

Kaliba *et al.,* (2009) found that financial deficiencies on either client or contractor and delayed payments play a major role on accounting for project delay in construction projects in Zambia. Kariungi (2014) argues that timely availability of funds causes the delay for electric power supply in Kenya, whereas for Tanzania, study conducted by Kikwasi (2012) argued timely payment to contractors, funding problems and compensation issues led to projects delay.

Aditya *et al.,* (2017) argued the lack of professionalism and cash flows faces water construction projects in India where contractor fails to adopt the procedures in order to achieve targets due to their negligence and reluctance. They found that often contractors suffering from cash flows and sometimes it is caused due to delays in bills processing but in most cases is due to inaccurate investment plan required to execute the work as a result causes the project delay. They also found there existed the improper use of advance payments where material resources were not present at the time work was supposed to be carried out.

2.4 Research Gap

Through different studies in literature review above, it is evident that the concept of project delay is not new in the area of construction projects. It can be seen that gap left range from geographical, nature of organization, technology, culture involved as well as time.

Aditya *et al.,* (2017) studied the delays and difficulties in implementations with reference to Water Supply Project in India, the project is conceptually identical but

India is located in Asia which is geographically very far away from Zanzibar with difference in technology, economy and cultures etc.

Other studies in delays of construction projects are of collective field and not specifically construction of water supply related projects for example, Kikwasi (2012) studied causes and effects of delays and disruptions in construction projects in Tanzania, the case study is not narrowed to a specific organization because challenges faced by water construction projects may be pretty different from other industry e.g public buildings, road and highway constructions e.t.c. The study filled the existed gap from the above seen studies by narrowing the area of the study specifically in water supply in Zanzibar.

2.5 Conceptual Framework

Mugenda (2008), defined conceptual framework as the brief description of the phenomenon under study accompanied by a graphical or visual depiction of the major variables of the study. This study was guided under the following conceptual framework;

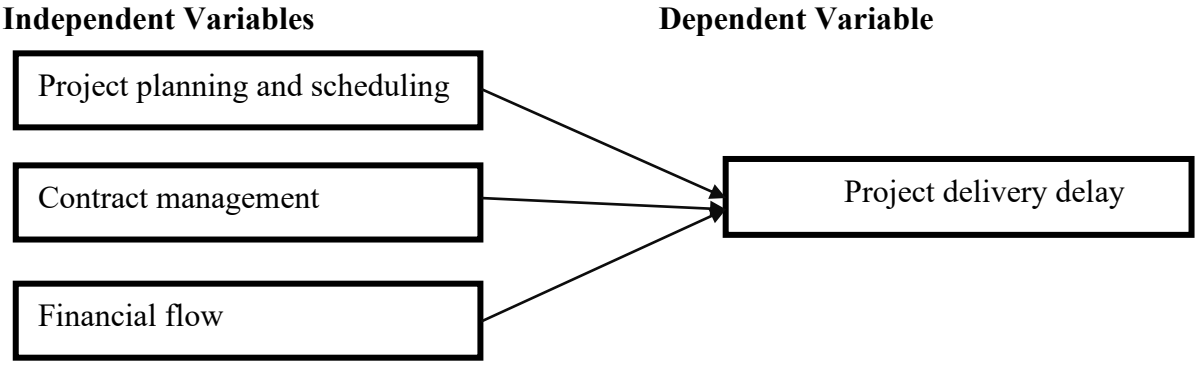

Figure 2.3: Conceptual Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Paradigm

This study used the philosophy of positivism where quantitatively different measurement of data were obtained from targeted population.

3.2 Research Approach

This study used a deductive approach where developed research questions were tested. The approach is efficient since the researcher was independent from what was being researched.

3.3 Research Design

Kothari (2004) defined research design as the conceptual structure within which research is conducted that constitutes the blueprint for collection, measurement and analysis of data, as a results answers to research questions can be obtained in minimal effort. Selltiz *et al.,* (1959) recognize research design as the arrangement of conditions for collection and analysis of data in a manner that aim to combine relevance to the research purpose with economy in procedure.

This study adopted descriptive survey research design such that people's attitudes, opinions and other possible behaviors that account for project delay were examined. Kothari (2004) argued that descriptive research includes surveys and fact finding enquiries of different kinds where the major purpose is description of the state of affairs as it exists at present. The design involves variables for analysis and utilize

data collection and analysis techniques that return reports concerning the measures of central tendency and variation. Furthermore, the good news is that a researcher report what is really happened since he is free from the control of variable.

3.3.1 Area of Study

This study conducted at Zanzibar Water Authority (ZAWA), the area was chosen because the water construction projects is being run by mentioned Authority. Moreover the researcher live nearby the authority and the project construction sites where it was easily for data collection.

3.3.2 Target Population

Mugenda and Mugenda (1999) defined target population as the entire group of individuals or objects having common observable characteristics upon which the researcher is interested in generalizing the results of the study. Water projects involves many stakeholders with different qualifications and each stakeholder has at least one specific role from conception to close phase of project. We have had respondents ranging from project donors, contractors, project owners, consultants, engineers and others in related field totaling up to 100 personnel.

3.3.3 Sample and Sampling Technique

A sample represent a subset of the total population that is of interest for the research whereas sampling involves a process of selecting a subset of that population (sample) in order to obtain information regarding the phenomenon of interest. Kothari (2004) defined sampling as the selection of some part of an aggregate or totality on the basis of which a judgement or inference about the aggregate or totality is made that is to say

it is the process of obtaining information about an entire population by examining only a part of it. Also argued further about the sample to be truly representative of population characteristics without any bias so that it may result in valid and reliable conclusions. Sampling can be of either probability or non-probability technique. This study adopted simple random sampling approach where respondents were selected randomly giving respondent equal chance of being selected to the sample.

3.4 Procedure for Data Collection

Morris (1990) defined procedure for data collection as guidelines for gathering pieces of information that are necessary for research process from a target population. Kothari (2004), the task of data collection begins after a research problem has been defined and research design/ plan chalked out and argued further social science studies data are divided into two types which are primary and secondary data.

Kothari (2004) defined primary data as those which are collected afresh and for the first time, and thus happen to be original in character whereas secondary data, on the other hand, are those which have already been collected by someone else and which have already been passed through statistical process.

3.4.1 Methods of Data Collection

This study intended to use only primary data. Therefore, a single quantitative data collection technique used is questionnaire. Kothari (2004) argued that descriptive study involving surveys then primary data can be obtained through questionnaire, schedules, observations at the site and through personal interviews etc., as for this study only questionnaire was administered to collect data.

3.4.1.1 Questionnaire

A questionnaire consists of a number of questions related to the study in issue printed or typed in a definite order on a form or set of forms and being sent to the persons/ respondents concerned with a request to answer the questions and return the questionnaire (Kothari, 2004). The respondents supposed to understand the questions before write down a reply and they have to answer the questions on their own.

For this study a self – administered, structured and standardized questionnaire consisted of two part was prepared and used to obtain information from target population. The first part of questionnaire involves questions relating to personal information of participant and the other part consist of questions relating to subject matter.

3.5 Data Processing and Analysis

Kothari (2004) defined data processing as editing, coding, classification and tabulation of collected data so that they are responsive to analysis, furthermore defined data analysis as the computation of certain measures along with searching for patterns of relationship that exist among data-groups. This study used software named Statistical Package for the Social Sciences (SPSS) for statistically manipulating collected data where both Pearson Correlations and Multiple Regression Analysis were used to analyze the data. The study assessed means, standard deviations, minimum and maximum of the determinants of delivery delays (variance) of water projects in Zanzibar from which conclusions were drawn. The study used project delivery delay as dependent variable whereas project planning and scheduling,

contract management, and financial flow to a project as independent variables. The research findings were organized and presented in numerical form and words through statistical tools such as frequency table, charts, histograms and simple percentage methods.

3.5.1 Model Specification

Mathematically the model for specific objectives of the study is expressed as follows;

$$PDD = f(P, CO, FI)$$

$$PDD = \beta_0 + \beta_1 P + \beta_2 CO + \beta_3 FI + \varepsilon$$

Where, PDD = Project Delivery Delay, P = project planning and scheduling, CO = contract management, FI = Project financial flow, β_0, β_1, β_2 and β_3 are coefficient of independent variables and ε = error term.

3.6 Measurement of Variables

The study has three independent variables, which are project planning and scheduling, contract management and financial flow to the project and project delivery delay as dependent variable. Standard questionnaire was used to measure these variables. The study adopted instrument used by Kimemia (2015) and Kwatsima (2016) to measure the independent variables. The instrument consist of 21 questions of which 14 are constructed using 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) to give the respondent wide variety of weight to which he/she sees the problem, one of ‘yes’, ‘no’ and ‘not sure’ type of question and 6 questions are for demographic characteristics of the respondents. Scores were put into SPSS for analysis and results was interpreted to find out the relationship between independent variables and delivery delay for water projects as dependent variable.

3.7 Validity and Reliability of Measuring Instruments

Kothari (2004) argued that measuring tools should pass the test of validity, reliability and practicality in order to be used in research. On their study on validity and reliability of data, Heale and Twycross (2015) narrated that the extent to which a concept is accurately measured in a quantitative study is known as validity whereas the extent to which a research instrument consistently has the same results if it is used in the same situation on repeated occasions is reliability.

In this study, pilot study was done prior to test whether the tool is truly measuring what is intended to measure, hence validity of data was drawn whereas pre-testing of data collection methods and conducting pilot study before actual exercises to draw reliability. Research findings are meant to develop a solution on research questions and good solutions rely on reliability and validity of measuring instruments.

3.8 Ethical Issues

David and Resnik (2011) defined ethics as norms for conduct that distinguishes acceptable and unacceptable behavior. Ethical refers to the standards of behavior that guide researchers' conduct in relation to the rights of those who become the subject of research, or are affected by it (Saunders et al., 2012).

In this Study, all information including respondent’s personal details and sensitive data are kept confidential, also referring participants by their names, forcing participants to reveal information and asking embarrassing questions to enhance honest were avoided so as to protect the respondents from emotional, social,

economic, physical and psychological harm. Moreover, Creswell (2003) argued about informed consent form, the form was prepared and participants were given the form to sign and engaging themselves to this study, the form recognize the rights of participants to be protected during data collection.

CHAPTER FOUR

INTERPRETATION, ANALYSIS AND DISCUSSION OF THE FINDINGS

4.1 Introduction

The chapter addresses the descriptive analysis and interpretation of the data collected from respondents where IBM SPSS version 24 software was used. The findings are presented in tabular forms and narrative analysis. Also the chapter interpret the findings in several subsections to answer research questions.

4.2 Interpretations of the Results

4.2.1 Response Rate of the Study

Questionnaires were distributed to 100 various stakeholders of water projects construction industry, in which only 92 were completed and returned.

Table 4.1: Study Response Rate

	Frequency	Percentage
Responded	92	92%
Not responded	8	8%

4.2.2 Demographic Characteristics of Respondents

Tables from 4.2 to 4.7 below represent the respondents' biographical data.

Age group of participant

Consider Table 4.2 shows the majority of the respondent were aged 31-40 years (35.9%), 41-50 years (32.6%), 21-30 years (15.2%), above 50 years (13%) and below 21 (3.3%) in descending order.

Table 4.2: Age Group of Participant

Age group of participant		
	Frequency	Percent
< 21 years	3	3.3
21-30 years	14	15.2
31-40 years	33	35.9
41-50 years	30	32.6
> 50 years	12	13.0
Total	**92**	**100.0**

Gender of participants

Table 4.3 shows that the sample consisted of 78.3% of male and 21.7 of female participants.

Table 4.3: Gender of Participant

	Frequency	**Percent**
Male	72	78.3
Female	20	21.7
Total	**92**	**100.0**

Level of education of participants

Table 4.4 below shows, 52.2% where bachelor degree holder, 19.6% were masters degree holder, 14.1% were diploma holders, 4.3% were certificate holders and lower, 7.6% were doctorate and above holders and 2.2% were advance diploma holders.

Table 4.4: Level of Education

	Frequency	**Percent**
Certificate and below	4	4.3
Diploma	13	14.1
Advance Diploma	2	2.2
Bachelor Degree	48	52.2
Masters' Degree	18	19.6
Doctorate and Above	7	7.6
Total	**92**	**100.0**

Marital status of participants

Table 4.5 shows the marital status of respondents where 83.7%, 10.9%, 4.3% and 1.1% are married, single, widow/widower and divorced/ divorcee respectively.

Table 4.5: Marital Status of Participant

	Frequency	Percent
Single	10	10.9
Married	77	83.7
Divorced/Divorcee	4	4.3
Widow/Widower	1	1.1
Total	92	100.0

Experience of participants

Table 4.6 shows that 37%, 25%, 18.5% and 19.6% of the respondents have below 4 years, 4-6 years, 7-8 years and above 8 years of experience in construction projects respectively.

Table 4.6: Years of Experience of Participant

	Frequency	Percent
<4 years	34	37.0
4-6 years	23	25.0
7-8 years	17	18.5
>8 years	18	19.6
Total	**92**	**100.0**

Job title of the respondents

Table 4.7 shows that 20.7%, 19.6%, 9.8%, 7.6%, 13%, 2.2% and 27.2% of the respondents were Contractor, Consultants, Project Managers, Clients, Engineers, Donors and Other stakeholders from the Ministry of Water respectively.

Table 4.7: Job Title of Respondent

	Frequency	Percent
Contractor	19	20.7
Consultant	18	19.6
Project Manager	9	9.8
Project Client / Owner	7	7.6
Engineer	12	13.0
Project Donor	2	2.2
Other Stakeholder From Water Ministry	25	27.2
Total	**92**	**100.0**

4.2.3 Descriptive Statistics for Statements of the Questionnaire

4.2.3.1 Influence of Project Planning and Scheduling on Delivery Delay of Water Projects

Table 4.8 means distribution from questionnaire statements on influence of project planning and scheduling on delivery delay of water projects.

Table 4.8: Descriptive Statistics for Statements of the Questionnaire

Descriptive Statistics							
		N	Minimum	Maximum	Mean		Std. Deviation
SN		Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
1	Improper planning and coordination of project activities	92	1.00	5.00	3.8152	.11350	1.08870
2.	Incomplete definition of nature of activities sequence	92	1.00	5.00	2.3370	.11595	1.11214
3.	There is incorporation of unforeseen factors in planning and scheduling	92	2.00	5.00	2.8152	.09888	.94844
4.	project plans and schedules are being compromised due to external interference	92	1.00	5.00	3.9348	.11442	1.09749
5.	Late revising and approving design documents by project owner	92	1.00	5.00	3.9457	.11185	1.07278

The Table 4.8 shows the mean distribution on extent to which the respondents rate the scores on how project planning and scheduling influence delivery delay of water projects in Zanzibar where question 7,10 and 11 have mean distribution of above 3.5 which it is evident majority of the respondents agreed on the questions.

4.2.3.2 Influence of Contract Management on Delivery Delay of Water Projects

Table 4.9 below shows the mean distribution of responses on questionnaire statements concerning the extent to which contract management influence delivery delay on water projects. Questions 14 and 16 have got mean greater than 3.5 which indicates

that majority of the respondents agree that the respective statements had something to do with project delivery time overrun. Question 12 and 13 mean distribution is approximately 3 which indicate that respondents are evenly distributed on weighing the statements. Whereas for the statement number 15 respondents are moderately agreed on the statement.

Table 4.9: Influence of Contract Management on Delivery Delay of Water Projects

	Descriptive Statistics						
SN		**N**	**Minimum**	**Maximum**	**Mean**		**Std. Deviation**
		Statistic	**Statistic**	**Statistic**	**Statistic**	**Std. Error**	**Statistic**
12	Risk analysis is poorly done in competitive bidding context.	92	1.00	5.00	2.9565	.11243	1.07839
13	Contractor fails to meet the obligation of the contract.	92	1.00	5.00	3.1413	.12612	1.20968
14	There is poor Information flow between project owner and contractor?	92	1.00	5.00	3.5217	.11718	1.12395
15	Water management committee is involved on awarding contracts with transparency.	92	1.00	5.00	3.3587	.10086	.96740
16	There is existence of conflict of interest between parties.	92	2.00	5.00	3.7065	.08111	.77797

4.2.3.3 Influence of Financial Flow on Delivery Delay of Water Projects

Table 4.10 shows the mean distribution of responses on questionnaire statements concerning the extent to which financial flow influence delivery delay on water projects. Mean distribution of Statement 17, 18 and 20 are greater than 3.5 indicating a large number of respondents agreed on the statements that there were problems in financial flow that account to the delivery delay of water projects. As for statement number 13 mean distribution is less than 3 indicating budgets were not approved on time leading to water delivery delay.

Table 4.10: Mean Distribution on Influence of Financial Flow

	Descriptive Statistics						
SN		**N**	**Minimum**	**Maximum**	**Mean**		**Std. Deviation**
		Statistic	**Statistic**	**Statistic**	**Statistic**	**Std. Error**	**Statistic**
17	Adequate funding is not available for the duration of the project	92	1.00	5.00	3.8152	.11350	1.08870
18	There are observed delayed payments made.	92	1.00	5.00	3.9348	.11337	1.08743
19	project budgets are being approved on time	92	1.00	5.00	2.3370	.11595	1.11214
20	Inflation and increase of cost of construction materials.	92	1.00	5.00	4.0435	.09001	.86333

4.2.3.4 Descriptive Statistics of the Variables of the Study

Table 4.11: Descriptive Statistics of Independent Variables

Descriptive Statistics				
variable	N	Mean		Std. Deviation
	Statistic	Statistic	Std. Error	Statistic
Project planning and scheduling	92	3.3696	.05929	.56873
Contract management	92	3.3370	.07983	.76571
Financial flow to the project	92	3.5326	.07495	.71888
Delivery delays of projects	92	2.9457	.02835	.27191

The Table 4.11 shows overall mean value for each variable of the study. Since the average mean value for dependent variable (delivery delays of water projects mean = 2.9457 and standard deviation = 0.27191) is very close to 3, which mean majority of the respondents agreed that water projects in Zanzibar overrun the delivery time.

The extent to which Project planning and scheduling influence on delivery delay of water projects is represented by (cumulative mean = 3.3696 and standard deviation = 0.56873). The extent to which contract management influence delivery delay of water projects is represented by cumulative mean = 3.3370 and standard deviation = 0.76571 and finally the extent to which financial flow influence delivery delay of water projects is represented by cumulative mean = 3.5326 and standard deviation = 0.71888.

4.2.4 Correlation Analysis Results

4.2.4.1 Correlation of Dependent Variable and Independent Variables

Main objective of this study is to find to what extent do variables (project planning and scheduling, Contract management and financial flow to the water projects) overrun delivery time of water projects in Zanzibar. As for this study Pearson Correlations were computed and the results are as follows as shown in the Table 4.12.

The results of the Table 4.12 reveals that there is significant positive relationship between project planning and scheduling and water delivery time thus, Poor project planning and scheduling for water project in Zanzibar led to overrun the delivery time since the Pearson correlation coefficient and p value are ($r = 0.273^{**}$ and $p < 0.01$) for two tailed test. As for the financial flow to water projects, the study also found there is positive significant relationship between the variables. Thus financial flow to the water projects in Zanzibar were also one of the factor that led to overrun of delivery time of water projects since Pearson correlation coefficient and p value are ($r = .332^{**}$ and $p < 0.01$) for two tailed test.

Furthermore, As far as contract management is concerned, the study found there is no significant relationship between practice of contract management and water delivery delays in Zanzibar, thus there is no strong evidence that there existed problems in contract management which led to time overrun for delivery of water projects in Zanzibar since the Pearson correlation coefficient and p value are ($r = -0.38$ and $p>0.01$) respectively.

Table 4.12: Correlations of Independent Variables against Water Projects Delivery Delay

Correlations					
		P	CO	FI	PDD
P	Pearson Correlation	1	-.039	.916**	.273**
	Sig. (2-tailed)		.714	.000	.008
	N	92	92	92	92
CO	Pearson Correlation	-.039	1	-.082	-.038
	Sig. (2-tailed)	.714		.437	.721
	N	92	92	92	92
FI	Pearson Correlation	.916**	-.082	1	.332**
	Sig. (2-tailed)	.000	.437		.001
	N	92	92	92	92
PDD	Pearson Correlation	.273**	-.038	.332**	1
	Sig. (2-tailed)	.008	.721	.001	
	N	92	92	92	92
**. Correlation is significant at the 0.01 level (2-tailed).					

Source: Field Data (2018)

4.2.5 Multiple Regression Analysis Results

4.2.5.1 Regression Analysis of Independent Variables to Delivery Delays of Water Projects

Given two independent variables influence of Financial flow to the water projects and Project planning and scheduling are highly correlated (Pearson correlation coefficient = .916** and p value < 0.01) then they cannot be run together on regression analysis since it will results to imprecisely estimation of at least one of regression coefficients (Hair *et al.,* 2013). In this study the regression analysis was done into two separate ways, firstly when financial flow to water projects and contract management used as independent variables (predictors).

Table 4.13 shows the value of R square in model summary as 0.111 (11.1%) which means 11.1% of variations in dependent variable (delivery delay of water projects) can be explained by this model containing contract management and financial flow to the projects. In turn adding other independent variables could results into fit for the model for the remaining unexplained 88.9% variations.

As for ANOVA results, the table shows F(2,89)=5.534, p value = 0.005 which is less than 0.05 indicates regression model statistically significantly predict the dependent variable (delivery delay of water projects). In coefficients results the table also show unstandardized coefficient for the model (-.004 for CO and .125 for FI and Constant = 2.515) which produce regression model PDD = 2.515 + 0.125FI – 0.004CO and collinearity statistics where tolerance of .993 and VIF of 1.007 for both independent variables which mean independent variables in the model are not redundant because values are close to 1 and significance (p value) for each independent variable as .917

for CO and .001 for FI which means coefficient of Contract Management is not statistically significant at 0.05 level since its p-value is greater than 0.05 and for financial flow its coefficient is statistically significant at 0.05 level since its p-value is less than 0.05. Finally, the results above indicate that delivery delay of water projects has significant and positive relationship with financial flow, but it is negatively and not significant related to contract management.

Table 4.13: Regression Analysis of Financial Flow to the Projects and Contract Management Against Water Projects Delivery Delay

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.333[a]	.111	.091	.25930

a. Predictors: (Constant), FI, CO

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.744	2	.372	5.534	.005[b]
	Residual	5.984	89	.067		
	Total	6.728	91			

a. Dependent Variable: PDD

b. Predictors: (Constant), FI, CO

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2.515	.188		13.361	.000	2.141	2.889		
	CO	-.004	.036	-.011	-.105	.917	-.075	.067	.993	1.007
	FI	.125	.038	.332	3.305	.001	.050	.201	.993	1.007

a. Dependent Variable: PDD

Source: Field Data (2018)

As for Project planning and scheduling and contract management is concerned as predictors in Table 4.14 shows the model summary shows R square to be 7.5% as the percentage of variations in dependent variable. The other way around the remaining percentage 92.5 is still unexplained and can be attained by adding other independent variables. ANOVA yield F (2,89)=3.634 and p value < 0.03 which is less than 0.05 indicates regression model statistically significantly predict the dependent variable (delivery delay of water projects).

In coefficients results the table also show unstandardized coefficient for the model (-.1 for CO and .13 for P and Constant = 2.539) which produce regression model PDD = 2.539 + 0.13P – 0.1CO. As for collinearity statistics both tolerance and VIF are 0.998 and 1.002 respectively for both variables which is close to 1 which means independent variables are not redundant whereas for significance for each predictor is 0.79 for contract management and 0.009 for planning and scheduling means coefficient of Contract Management is not statistically significant at 0.05 level since its p-value is greater than 0.05 and coefficient Project planning and scheduling is statistically significant at 0.05 level since its p-value is less than 0.05.

Finally the results above indicate that delivery delay of water projects has significant and positive relationship with project planning and scheduling, but it is negatively and not significant related to contract management.

Table 4.14: Regression Analysis of Project Planning And Scheduling and Contract Management Against Water Projects Delivery Delays

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.275[a]	.075	.055	.26437

a. Predictors: (Constant), P, CO

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.508	2	.254	3.634	.030[b]
	Residual	6.220	89	.070		
	Total	6.728	91			

a. Dependent Variable: PDD
b. Predictors: (Constant), P, CO

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2.539	.210		12.117	.000	2.123	2.955		
	CO	-.010	.036	-.027	-.267	.790	-.082	.062	.998	1.002
	P	.130	.049	.272	2.670	.009	.033	.227	.998	1.002

a. Dependent Variable: PDD

Source: Field Data (2018)

4.2.5.2 Regression Analysis of Demographic Variables

Table 4.15 shows the value of R square as 0.125 which means 12.5% of variations in dependent variable (Financial flow to water projects) can be explained by the regression model containing mentioned demographic variables. Among demographic variables only coefficient of job title of the respondents is statistically significant at 0.05 level because its p value is less than 0.05 whereas for age, gender, level of education, marital status and years of experience of participants are not statistically significant at 0.05 level because their p value is greater than 0.05.

Table 4.15: Regression Analysis of Demographic Variables against Financial Flow to Water Projects

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.353[a]	.125	.063	.69593

a. Predictors: (Constant), JR, G, YOE, LE, MS, AG

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.430	.544		8.143	.000
	AG	-.140	.136	-.195	-1.025	.308
	G	.124	.182	.072	.682	.497
	LE	.031	.070	.053	.441	.660
	MS	-.200	.214	-.123	-.934	.353
	YOE	.036	.106	.058	.342	.733
	JR	-.100	.037	-.325	-2.689	.009

Dependent variable; FI

Source: Field data (2018)

Table 4.16 shows model summary, R square is 0.222 which indicate that 22.2% of the variation in contract management can be explained by using the model containing mentioned demographic variables. The table shows only marital status and age of participants are statistically significant at 0.05 level because their p values are less than 0.05 contrary to other demographic variable indicates not statistically significant because their p values is greater than 0.05.

Table 4.16: Regression Analysis of Demographic Variables against Contract Management

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.471[a]	.222	.167	.69898

a. Predictors: (Constant), JR, G, YOE, LE, MS, AG

coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.443	.546		6.300	.000
	AG	.381	.137	.498	2.778	.007
	G	-.078	.183	-.042	-.426	.671
	LE	-.110	.071	-.175	-1.560	.122
	MS	-.476	.215	-.275	-2.215	.029
	YOE	-.009	.107	-.013	-.080	.936
	JR	.023	.037	.069	.608	.545

Dependent variable: CO

Source: Field Data (2018)

Model summary of Table 4.17 R square value is 0.184 which indicate 18.4% variations in project planning and scheduling can be explained by the regression model containing mentioned demographic variables and job title, age and years of experience of participants shows statistically significant at 0.05 level because their p values is less than 0.05 contrary to gender, marital status and their level of education.

Table 4.17: Regression Analysis of Demographic Variables against Project Planning and Scheduling

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.429[a]	.184	.127	.53145

a. Predictors: (Constant), JR, G, YOE, LE, MS, AG

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.263	.415		10.261	.000
	AG	-.369	.104	-.651	-3.545	.001
	G	-.044	.139	-.032	-.316	.753
	LE	.028	.054	.061	.527	.599
	MS	.066	.163	.052	.405	.686
	YOE	.203	.081	.408	2.502	.014
	JR	-.073	.028	-.300	-2.574	.012

Dependent variable: P

Source: Field Data (2018)

4.3 Discussion of the Findings

This study sought to investigate the determinants of delivery delay of water projects in Zanzibar. Three questions were developed to address the problem which are first to examine the extent to which project planning and scheduling influence on delivery delay of water projects, second question is to examine the extent to which contract management influence on delivery delay of water projects and finally to examine the extent to which financial flow to the projects influence on delivery delay of water projects.

The findings show there exist delivery delay on water projects in Zanzibar, which is not different from other studies of similar sort. This goes in line with the studies conducted by al-Momani (2000) in Jordan and frimpong *et al.,* (2003) in Ghana where they found out 82% and 70% construction projects were delayed respectively.

The study found statistically there is significant and positive relationship between delivery delay of water projects in Zanzibar and practice of planning and scheduling of water projects. Improper planning and scheduling emerge to be causing factor this was also observed by Aftab (2014) in Zambia on his study of time overrun of construction projects. Nonetheless external interference on project schedules and plans were also found to be one of the factor to cause delays on project delivery just as it was seen by Mohamed (2017) in his study of Time Overruns on the Implementation of County Construction Projects in Kenya where he narrated that politicians as external factor significantly influence on the rate of project completion.

The study did not find enough evidence to conclude that contract management were the causing factor for water delivery delay in Zanzibar contrary to the findings of (Aditya *et al.,* 2017; Frimpong *et al.,* 2003), thus there were no significant relationship between contract management and water projects delivery delay.

The study found statistically there is significant and positive relationship between delivery delay of water projects in Zanzibar and financial flow to the projects, thus projects were being delayed due to poor practice and management of project financing. Financial flow to the project has been analyzed and major problem were found to be in inflation and increase of cost of materials, this is due to time value of

money and interest due to delay on payments. Nonetheless several delays on payment were frequently observed, this is the same as it was found out by Kaliba *et al.,* (2009) and Alinaitwe *et al.,* (2013) who concluded that delays on honoring payments certificates results to time overrun on delivery of the project for example contractor may be given the contract but the client overrun the time to pay first installments this is because adequate funding was not available at right time. Also the study find out that project budgets are not approved on the right time to make room for other project activities to take place.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of findings, conclusions and recommendations based on the data analyzed in the previous chapter. Here, the study aims at suggesting possible remedial measures to rectify the problems that result to delivery delay of water projects specifically in Zanzibar and suggest area for further studies.

5.2 Summary of the Findings

The primary purpose of the study is to analyze determinants of delivery delay for water projects in Zanzibar, where the researcher by the use of questionnaire as data collection tool assess the extent to which project planning and scheduling, contract management and financial flow influence delivery delay of water projects in Zanzibar.

As demographic factor is concerned, the study shows majority of respondent in water projects are male which make 78.3% of the population compared to 21.7% of female, also personnel aged 31-40 years participated in large number (35.9%) compared to others. The study shows majority of the respondents were married 83.7%.

Findings of this study are not quite different from other studies of similar kind that were being done from other African countries and outside. The following are summary of the findings;

The study reveal that practice of project planning and scheduling associated to water projects in Zanzibar were found to have significant influence on delivery delay.

Though aspect such as incorporation of unforeseen factors in water projects were approximately even distributed on questionnaire responses, areas such as improper planning and coordination of project activities, incomplete definition of nature of activities sequence, delay on revising and approving of design documents, and external interference on project schedules and plans were the factors that causes delivery delay for water projects in Zanzibar.

The study also reveal there is problems in project financing that lead to delivery delay of water projects in Zanzibar, areas such as inflation and increase of cost of materials, timely honouring payment certificates, existence of adequate funds for projects and timely budgets approval were prevailing factors.

The study reveal that there were no evident problems on contract management leading to water delivery delay such that factors of conflict of interest for contracting parties, information flow on reporting the project progress, practice of competitive bidding process and contract awarding process, involvement of water committees, failure of contractors to meet the obligation of the contract did not significantly lead to delivery delay.

5.3 Conclusion

There is no life without water, as demand for water increases, Government and other stakeholders need to look widely for ways to improve and augment water supplies by initiating several water projects to cover the need. These projects will encounter factors that may cause project delay though the impact of the delays can be minimized if their causes is effectively identified and analyzed.

Among the three specific objectives of this study, financial flow (project financing) has been a bigger problem for the timely accomplishment of water projects in Zanzibar, nonetheless factors in financial flow depend on each other for example failure to approve budget on time automatically delay on payments may occur and as time passes there may be increase of cost of materials etc.

A project plan is a roadmap that shows all description of each activity from conception to the delivery of the project and the sequences that show execution of these activities over a period of time is called a schedule. Water projects in Zanzibar suffers on poor planning and scheduling due to several factor such as incomplete definition of sequences of activities, improper planning and coordination of project activities. Nonetheless water projects suffers the most from external interference on schedules and plans as a results the actual work deviate from what has been planned on documents. Revising and approving of project plans and other design documents took a longer time hence unnecessarily waste plenty of time doing nothing.

In project management hiring for project activities is simply making a contract, each member in contract is required to fulfill an obligation toward each other. In that sense undertaking water projects just like other construction projects, up to date contracts should have been put forward to defend legal obligation toward each other though there is no evident connection from the study to conclude that delivery delay was caused by practice of contract management.

5.4 Recommendation

For any project to be efficient it should comply with three constraints that is time, scope and cost. Any construction project indeed provide lucrative opportunities to the

society, as far as water supply projects in Zanzibar is concerned the fruits of the projects improve availability of water for several purposes.

Due to research findings, the researcher recommend the following;

Clients should improve financial management systems by making adequate arrangements for funds before starting any project and ensure payments are being provided in timely manner based on contract agreement to prevent cash flows challenges from affecting delivery time of the project. Total project budget should be calculated to a stable currency such that inflation and depreciations of local currency does not affect the estimated cost in local currency.

Clients/ZAWA should formulate guidelines and policies for all areas in water projects activities to improve performance such areas are planning and scheduling, reporting relationship etc., thus each personnel will feel accountable for assigned work.

There should be established free regulatory body independent from the government to develop guidelines that benefit all parties in construction industry and regulate activities of contractors and consultants (administering contract management). All contractors and consultants should be registered to them.

There should be a formal contract signed between contracting parties (client, contractor and consultants) including issues such as payments, services expected e.t.c, contracts also should foresee the risk that contracting parties are exposed to from the project conception to delivery.

Government and other stakeholders in project management industry should invest on trainings to construction workers to equip them with technical skills such that any potential element of risk arises it can be easily identified and being tackled.

Contractor should employ right personnel for the right job for example project manager position should be held by a person with experience such a way that he/she could be able to apply proper project management techniques such as proper planning and scheduling, monitoring etc., and tools such as CPM and Gant Chart.

5.5 Area for further study

This study sought to find the determinants of delivery delay for water projects in Zanzibar and provide a measures for those factors to reduce impacts on water projects as narrated above, determinants of delivery delay for water projects is not bound only in project planning and scheduling and financial flow to the project but there are several factors that in one way or another may articulate the delays.

The researcher suggests the following further study to be taken to add up to the strategies to tackle delivery delays in water projects and construction industry at large. There is a room for other researcher to investigate for the same factors most especially contract management by using different tools because variables of this study are bigger areas in nature, also the study was only quantitative much less only questionnaire were employed to collect data. For instance mixed methods approach may be used to analyze the study to see if there is any different findings from this. Furthermore a researcher may add other independent variables to fit regression models to cover unexplained percentage of delays.

The researcher suggest further study on the rate at which factors such as design changes, procurement and resources and their allocations in project management affect the delivery delay of water projects in Zanzibar or digging for cost overrun on water projects and develop the relationship between cost overrun and delivery delay of water projects in Zanzibar. Furthermore a researcher suggest to assess the impact of trainings and workshops sessions on timely delivery of water projects in Zanzibar.

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APPENDICES

Appendix I: introduction

Dear respondent, my name is Muhsini Hassan and I am a student at Open University of Tanzania (OUT) pursuing a Master of Project Management (MPM). I am carrying out a research titled "A***nalyzing determinants of delivery delay of water projects in Zanzibar; the case of selected projects undertaken by Zanzibar Water Authority (ZAWA)"*** as part of the requirement for the award. I am delighted to invite you to participate in this research by filling out this questionnaire. Questions on this questionnaire is only for academic purposes and your information will be ethically treated with utmost anonymity and confidentiality.

For any enquiry about this study you can contact me at;

Mobile number: 0672537778/0621094975

Email: muh0802@gmail.com

Thank you in advance for your cooperation.

Hassan, Muhsini.

……..

Appendix II: Questionnaire

Part I: personal information (*Please tick where appropriate*)

1. Participant age group
    a. Below 20 years. [ ]
    b. 20-30 years. [ ]
    c. 31 - 40 years. [ ]
    d. 41- 50 years. [ ]
    e. 51years and above [ ]
2. Participant gender
    a. Male [ ]
    b. Female [ ]
3. Participant level of education
    a. Certificate [ ]
    b. Diploma [ ]
    c. Advance diploma [ ]
    d. Bachelor degree [ ]
    e. Masters' degree [ ]
    f. Doctorate and above [ ]
4. Marital status of participant
    a. Single [ ]
    b. Married [ ]
    c. Divorced/divorcee [ ]
    d. Widow/widower [ ]
5. Years of experience on construction projects

a. 1-3 [ ]

b. 4-6 [ ]

c. 6-8 [ ]

d. 8 and above [ ]

6. Working position on the project/organization;

   Contractor [ ], Consultant [ ], Project manager [ ], Owner [ ], Engineer [ ], donor [ ],

   Other [ ] …….. (Specify)

Part II: In your own opinion clearly tick where appropriate on how you agree with the following statements as it regards to the delivery delay of Water Projects in Zanzibar.

Project planning and scheduling	**Strongly disagree**	**disagree**	**Neutral**	**agree**	**Strongly agree**
7. There is improper planning and coordination of project activities due to inexperienced personnel.					
8. Incomplete definition of nature of activities sequence					
9. There is incorporation of unforeseen factors in planning and scheduling.					
10. Plans and schedules are being compromised due to external interference					
11. Late revising and approving design documents by project owner					

Contract management	Strongly disagree	Disagree	Neutral	agree	Strongly agree
12. Risk analysis is poorly done in competitive bidding context.					
13. Contractor fails to meet the obligation of the contract.					
14. There is poor Information flow between project owner and contractor?					
15. Water management committee is involved on awarding contracts with transparency.					
16. Often there exist conflict of interest between parties.					

Project financial flow	Strongly disagree	disagree	Neutral	agree	Strongly agree
17. Adequate funding is not available for the duration of the project					
18. There are observed delayed payments made.					
19. Project budgets are being approved on time					
20. There is observed inflation and increase of cost of construction materials.					
Water projects delivery delay			**No**	**Not sure**	**yes**
21. Water supply projects in Zanzibar are being delivered ahead of schedules?					